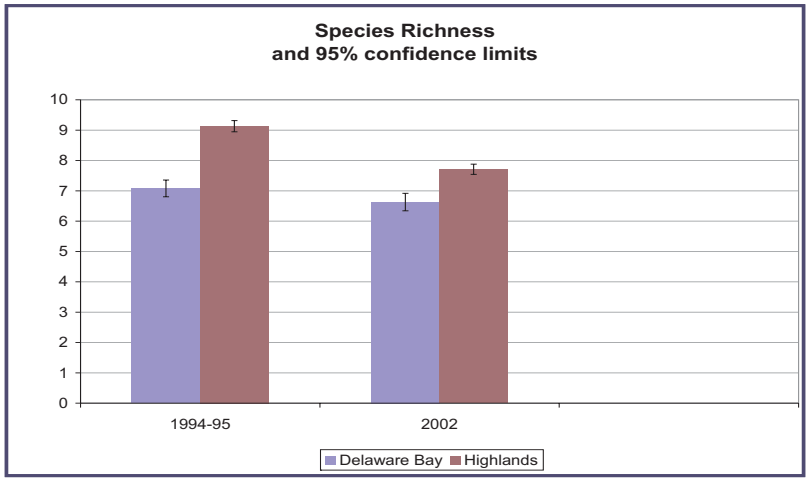
Wildlife Populations: Passerines (Perching Birds)

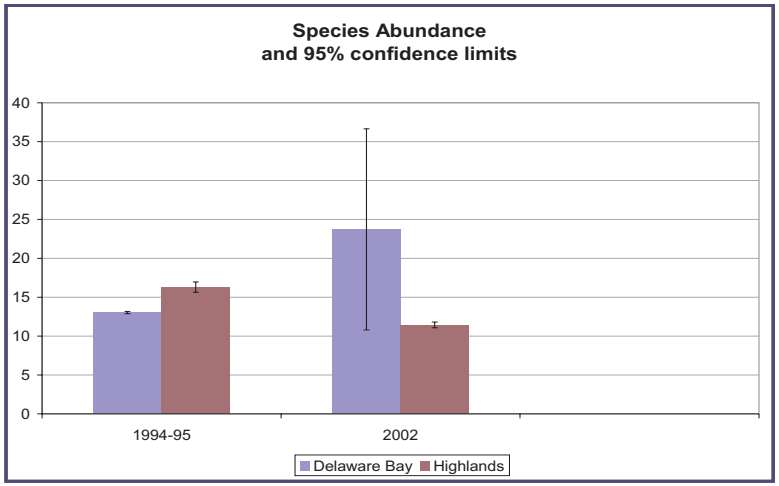
Background

Ecologists often use avian communities as indicators of environmental quality because their numbers easily can be monitored by nonprofessionals, and continent-wide breeding bird data is readily available.[1] In New Jersey, DEP's Division of Fish and Wildlife conducts a survey of passerines to estimate changes in species richness and abundance.[2] Approximately 50 percent of all bird species in the state are passerines, or perching birds, including neotropical migrants, which are birds that breed in North America and winter in the tropics. The conservation of neotropical migrants has become particularly important in recent years due to long-term population declines that have been detected.[3] Some neotropical migrants, such as the golden-winged warbler and cerulean warbler, have been suffering drastic long-term declines in the northeastern U.S. and are candidates for federal listing as threatened or endangered species.[4] Contributing factors to this decline may include the loss of wintering and migratory stopover habitat and fragmentation of temperate forest breeding habitats. As large swaths of forest are fragmented by agriculture or development, passerine breeding habitat is reduced, divided and isolated, diminishing breeding success. In addition, these fragmented areas are a favorable environment for human-tolerant species, such as European starlings and house wrens, which compete with neotropicals for cavity nest sites, and house finches, American robins, and northern cardinals, which tend to be more aggressive and more abundant than neotropical migrants. Many neotropical migrants nest near the ground, have relatively low reproductive potential, or have limited defenses with which to counter these invading species.[5]

Trend

Passerine surveys were completed in 1994/95 and in 2002. The surveys focused on two regions of New Jersey: the Delaware Bay area and the Highlands. The surveys were performed in four habitat types: forest, wetland, open/grassland and developed. In 2002, only about 50 percent of the sites sampled in 1994/95 were re-sampled. Survey points were located at least 600 meters apart along secondary roadways and in undeveloped areas, including large parks in urban areas, farms, the outskirts of urban and suburban areas, and areas that fit the traditional idea of undeveloped land such as forests and wetlands. The survey was conducted between official sunrise and 9:30 a.m. within the three-week period of peak breeding/territorial behavior, which runs from the end of May until the middle of June. The survey showed that mean species richness (the number of different species present) declined in both regions from 1994/95 to 2002. However, the survey also showed that mean species abundance (the number of individuals in a species) increased in the Delaware Bay region but decreased in the Highlands from 1994/95 to 2002.[1] (See Species Richness and Species Abundance Figures). This may have been the result of a higher degree of forest fragmentation that occurred in the Highlands during this period.





Outlook and Implications

Despite legislation such as the new Highlands Planning and Protection Act, it is likely that as development continues in New Jersey, forest fragmentation will increase. As the fragmentation increases, the species that are intolerant to fragmentation probably will continue to disappear from the landscape, decreasing species richness. At the same time, more tolerant species may take advantage of the decreased competition and continue to increase in number, or species abundance. However, habitat can become poor enough that it restricts the number of individuals of a species that can breed there, thus reducing the number of individuals at a site.

More Information

Visit the New Jersey Department of Environmental Protection, Division of Fish and Wildlife's Web site, www.nj.gov/dep/fgw/neomigr.htm, or contact the Endangered & Nongame Species Program, Division of Fish and Wildlife, 500 E. State Street, P.O. Box 400, Trenton, NJ 08625-0400. More information can also be obtained from the New Jersey Audubon Society at www.njaudubon.org

References

[1] Mayer, A. L. and G. N. Cameron. 2003. Landscape characteristics, spatial extent, and breeding bird diversity in Ohio, USA. Diversity and Distributions 9:297-311.

[2] DeFalco, S. and A. Dey. 2004. Passerine Survey Interim Report, New Jersey Department of Environmental Protection, Division of Fish and Wildlife. The DEP has proposed to repeat the survey every five to seven years. The survey done in 2002 was the second survey done in the Highlands and the Delaware Bay and the first survey in the Piedmont.

[3] Craves, J. 2002. For the Birds. Birder's World 16:46

[4] DeDalco, Sharon, 2005, New Jersey Department of Environmental Protection, Division of Fish and Wildlife, personal communication.

[5] Allen, P. A. and R. J. O'Connor. 2000. Interactive Effects of Land Use and Other Factors on Regional Bird Distributions. Journal of Biogeography 27:889-900.

[6] DeFalco and Dey, 2004.